CLAIMS

1. An exposure apparatus comprising:

temperature detector for detecting an ambient temperature;

a plurality of converters for converting input grayscale data into corrected grayscale data so as to correct for nonlinearity of exposure density;

an exposure member for performing grayscale exposure on a photosensitive material based on said corrected grayscale data; and

a selecting member for selecting an appropriate one of said converter in accordance with said ambient temperature detected by said temperature detector, wherein

said plurality of converters are set up so that each range of amount of exposure light is divided into substantially equal regions corresponding to a temperature region to be covered by each of said plurality of converter.

2. The exposure apparatus according to claim 1, wherein said plurality of converters correct for at least either a change in the amount of exposure light of said exposure member with respect to said detected temperature or a change in sensitivity characteristic of said photosensitive material with respect to said detected temperature.

3. The exposure apparatus according to claim 1, wherein said plurality of converters are set up so that each temperature range to be covered by each of said plurality of converters is divided into regions of unequal width.

4. The exposure apparatus according to claim 3, wherein said plurality of converters are set up so that any converter to be used in a higher temperature region covers a wider temperature range than any converter to be used in a lower temperature region.

5. The exposure apparatus according to claim 1,

further comprising:

a line light source for exposure, and wherein

said exposure member is a shutter member for optically modulating light emerging from said line light source, and said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said line light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said converter, and wherein

the aperture open time of said shutter member corresponding to maximum grayscale data is set substantially constant for all of said plurality of converters.

6. The exposure apparatus according to claim 5, wherein a grayscale data range to be controlled by each of said plurality of converters having a first grayscale range where a relationship between said grayscale data for each of said plurality of converters and the aperture open time of said shutter member matches the grayscale density on said photosensitive material, and a second grayscale range where the relationship between said grayscale data for each of said plurality of converters and said aperture open time does not match the grayscale density on said photosensitive material.

7. The exposure apparatus according to claim 6, wherein said second grayscale range is a grayscale range where a grayscale value is large.

8. The exposure apparatus according to claim 1, further comprising:

a line light source for exposure; and

a light amount correcter, and wherein:

said exposure member is a shutter member for optically modulating light emerging from said line light source,

said light amount correcter applies a

light amount correction to correct for a variation in the amount of said emergent light optically modulated by said shutter member,

each of said plurality of converters outputs said corrected grayscale data by nonlinearly correcting the grayscale data corrected by said light amount correcter, and

said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said line light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said converter with said light amount correction superimposed thereon, wherein

the aperture open time of said shutter member corresponding to maximum grayscale data is set substantially constant for all of said plurality of converter.

9. The exposure apparatus according to claim 8, wherein a grayscale data range to be controlled by each of said plurality of converters comprises a first grayscale range where a relationship between said grayscale data for each of said plurality of converter and the aperture open time of said shutter member matches grayscale density on said photosensitive material, and a second grayscale range where the relationship between said grayscale data for each of said plurality of converter and said aperture open time does not match the grayscale density on said photosensitive material.

10. The exposure apparatus according to claim 9, wherein said second grayscale range is a grayscale range where a grayscale value is large.

11. The exposure apparatus according to claim 1, further comprising:

a light source for exposure, and wherein

said exposure member is a shutter member for optically modulating light emerging from said light

source, and said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said converter, and wherein

a print time per unit area is set substantially constant for all of said plurality of converters.

12. The exposure apparatus according to claim 11, wherein said print time per unit area is the time required to print one line on said photosensitive material.

13. The exposure apparatus according to claim 12, wherein said print time required to print one line includes a mask time for performing data transfer and the like and a maximum grayscale aperture open time of said shutter member corresponding to maximum grayscale data.

14. The exposure apparatus according to claim 13, wherein said print time required to print one line is the sum of said mask time and a maximum aperture open time which is the longest maximum grayscale aperture open time of all the maximum grayscale aperture open times defined by said converter.

15. The exposure apparatus according to claim 14, wherein said mask time is varied among said plurality of converters so that said print time required to print one line becomes substantially constant for all of said plurality of converter.

16. The exposure apparatus according to claim 14, wherein said mask time is held constant for each of said plurality of converter, and a grayscale aperture close time is provided in addition to said maximum grayscale aperture open time so that said print time required to print one line becomes substantially constant for all of said plurality of converter.

17. The exposure apparatus according to claim 16,

wherein said grayscale aperture close time is equal to a time difference between said maximum aperture open time and said maximum grayscale aperture open time in each of said plurality of converters.

18. The exposure apparatus according to claim 14, wherein said mask time is held constant for each of said plurality of converter, and said maximum grayscale aperture open time is set approximately equal to said maximum aperture open time.

19. The exposure apparatus according to claim 18, wherein a grayscale data range to be controlled by each of said plurality of converter comprises a first grayscale range where a relationship between said grayscale data for each of said plurality of converter and the aperture open time of said shutter member substantially matches grayscale density on said photosensitive material, and a second grayscale range where the relationship between said grayscale data for each of said plurality of converter and said aperture open time does not match the grayscale density on said photosensitive material.

20. The exposure apparatus according to claim 19, wherein said second grayscale range is a grayscale range where a grayscale value is large.

21. The exposure apparatus according to claim 1, further comprising:

a light source for exposure; and

a light amount corrector, and wherein

said exposure member is a shutter member for optically modulating light emerging from said light source,

said light amount correcter applies a light amount correction to correct for a variation in the amount of said emergent light optically modulated by said shutter member,

each of said plurality of converter outputs said corrected grayscale data by nonlinearly

correcting the grayscale data, such as image data, corrected by said light amount correcter, and

said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said line light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said plurality of converter with said light amount correction superimposed thereon, wherein

a mask time is held constant for each of said plurality of converters, and a maximum grayscale aperture open time in each of said plurality of converters is set approximately equal to a maximum aperture open time so that a print time required to print one line becomes substantially constant for all of said plurality of converters.